PB88-172192

Superfund Record of Decision (EPA Region 6) Compass Industries Landfill Site Tulsa County, Oklahoma (Remedial Alternative Selection), September 1987

(U.S.) Environmental Protection Agency
Washington, DC

29 Sep 87

U.S. Department of Commerce
National Technical Information Service
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EPA/ROD/R06-87/025
September 1987

EPA

Superfund Record of Decision:

Compass Industries, L.F., OK

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SUMMARY OF REMEDIAL ALTERNATIVE SELECTION

COMPASS INDUSTRIES LANDFILL

TULSA COUNTY, OKLAHOMA

SEPTEMBER 1987

DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

Compass Industries, Tulsa County, Oklahoma.

STATEMENT OF PURPOSE

This decision document represents the selected remedial action for this site developed in accordance with Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and the National Contingency Plan (40 CFR Part 300).

The State of Oklahoma has concurred on the selected remedy. (Letter attached)

STATEMENT OF BASIS

This decision is based upon the administrative record for the Compass Industries Superfund Site [index attached]. The attached index identifies the items which comprise the administrative record upon which the selection of a remedial action is based.

DESCRIPTION OF THE SELECTED REMEDY

The major components of the selected remedy include:

- Installation of a cover which isolates contaminated material from human contact and reduces infiltration or precipitation through the landfill area. The capping and closure procedures will be designed in accordance with the Resource Conservation and Recovery Act (RCRA) to achieve a goal of 10^{-7} cm/sec premeability. If a synthetic liner is determined to be technically feasible and cost effective in accordance with the preliminary cost estimates developed in the Feasibility Study, that liner shall be no thicker than 30-40 mil.

- Collection and on-site treatment of contaminated groundwater in the upper, perched water bearing zone, if deemed necessary through compliance monitoring following installation of the cover material.

- Installation of fences and signs along the perimeter of the cap.

DECLARATION

The selected remedy is protective of human health and the environment, attains Federal and State requirements that are applicable or relevant and appropriate and is cost-effective. Finally it is determined that this remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable.

9/29/87
Date

Robert E. Layton Jr.
Robert E. Layton Jr., P.E.
Regional Administrator

Compass Industries Landfill
Record of Decision Concurrences

The Compass Industries Landfill Record of Decision has been reviewed and I concur:

Allyn M. Davis, Director
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Carl E. Edlund, Chief
Superfund Program Branch
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EXECUTIVE SUMMARY

The Compass Industries site is an abandoned landfill located west of Tulsa, Oklahoma. The site occupies an abandoned limestone quarry. From 1972 to 1976 the site was permitted and operated as a solid and industrial waste landfill.

Geologic investigations verify that the site is underlain by two aquifers. The Hogshooter Formation contains a shallow aquifer and the Layton Sandstone member of the Coffeyville Formation forms a deeper aquifer. The Hogshooter Formation forms an unconfined, low-yield perched aquifer. Between the upper and lower aquifers is a sequence of 32 to 50 feet of shales. The relatively low permeability of these shale units acts as a partial confining bed that restricts the downward migration of groundwater. Therefore, most of the groundwater contamination is confined to the Hogshooter Formation and the overlying soils.

Summary of Remedial Alternatives Selection for
Compass Industries Landfill
Tulsa County, Oklahoma
July 1987

I. SITE LOCATION AND DESCRIPTION

The Compass Industries site is an abandoned landfill located in a former limestone quarry west of Tulsa, Oklahoma (Figure 1). It is situated directly west of the Chandler Park softball facility, which is owned and maintained by Tulsa County. Physically, the site is situated on a bluff approximately one-quarter mile south and 200 feet above the Arkansas River. The site's topography slopes downward to the west and north and ranges in elevation from approximately 770 to 860 feet above mean sea level. The majority of runoff flows through water gaps in the ridge between the landfilled area and the river or to ponds on the landfill. The clayey topsoil that is present is derived from cover material utilized by the landfill operation. The natural soils in the area are composed mainly of limestone residuum and similar constituents. Pioneer plant species and grasses cover most of the site.

Site History

The Compass Industries site is located in a former limestone quarry which operated from the 1930's through the 1950's. The site was permitted by the Oklahoma State Department of Health and operated as a landfill from 1972 to 1976. There is evidence that dumping occurred as early as 1964. As one of the major landfills in the Tulsa area during those years, it accepted both municipal and industrial wastes. Unlike most landfills in current operation, the operators of Compass Industries landfill apparently kept few records concerning which wastes were disposed in the landfill. In addition, site data indicates that disposal of the waste was done in an irregular manner, making it difficult to ascertain where the wastes are located.

During the 1970's, several fires were reported at the landfill. The most recent fire burned out in late 1984. It had burned underground for several years, breaking through the topsoil cover on occasion. During this same time period, citizen complaints of odors prompted air monitoring in the vicinity of the landfill. The results obtained from this monitoring revealed the presence of some organics, but at levels that were considered non-hazardous. Currently there are no known underground fires at the site; however, there exits a potential for future fires.

The Compass Industries site was listed on the National Priorities List (NPL) in September 1984, and funding for the remedial investigation and feasibility study was provided by the U. S. Environmental Protection Agency (EPA).

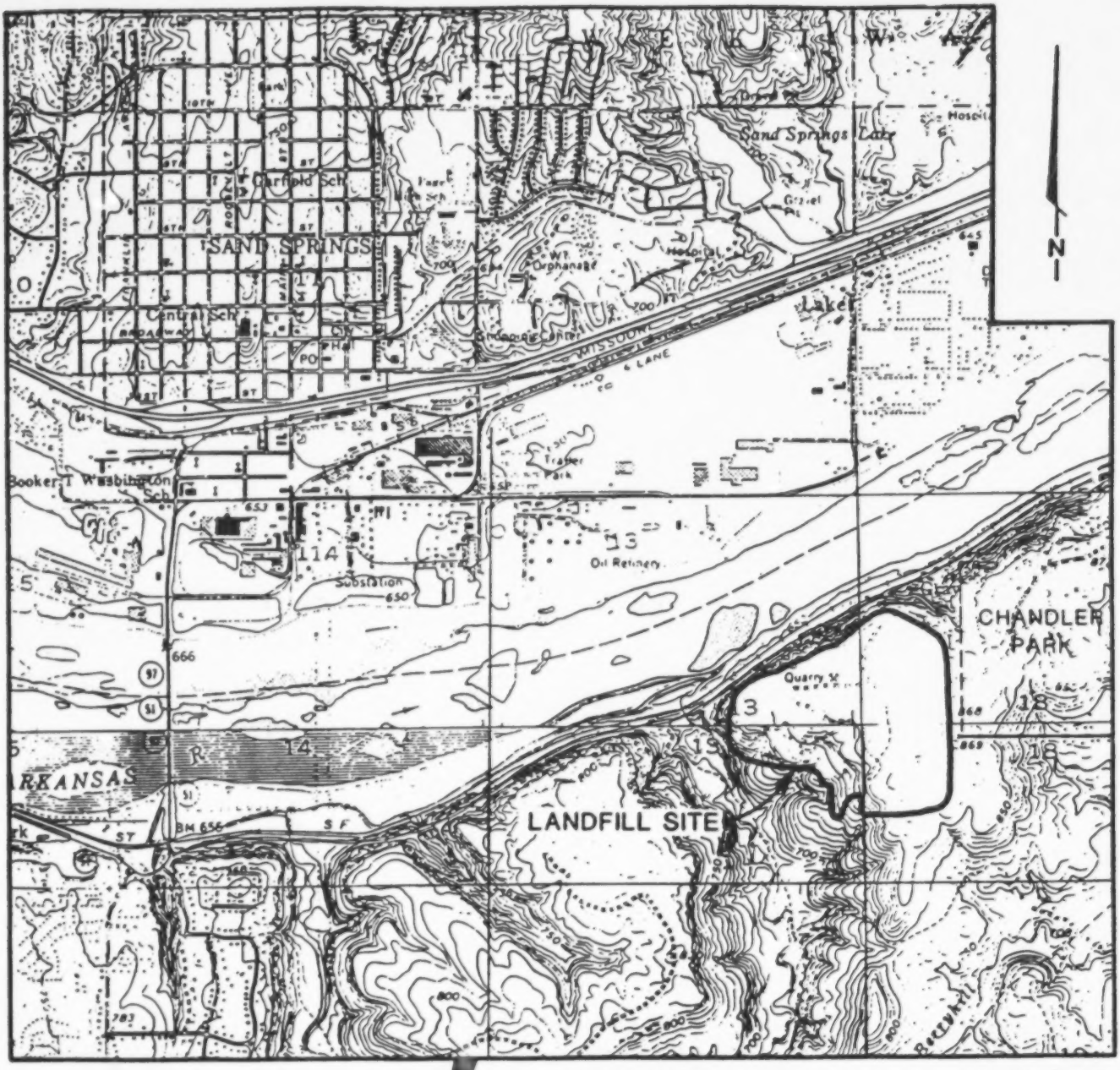

FIGURE 1

LOCATION MAP

COMPASS INDUSTRIES LANDFILL SITE
TULSA, OKLAHOMA

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Geology

The Compass Industries site occupies an abandoned limestone quarry on a hilltop about 200 feet above the Arkansas River, and 1/4 mile south of the site on the north. Surface water from precipitation runoff, springs, and seeps flows into the Arkansas River through a simple network of small streams.

The Hogshooter Formation and the Coffeyville Formation outcrop in and around the site (Figure 2), and comprise part of a sequence of shales, sandstones, and limestones formed in shallow marine and deltaic environments in late Pennsylvanian time.

The Hogshooter Formation forms an unconfined, low-yield perched aquifer that is exposed at the surface on all sides of the site. This aquifer is recharged directly from local precipitation infiltration and is discharged through seeps and springs into surface waters near and within the site.

A thick sandstone zone, the Layton Sandstone member of the Coffeyville Formation, forms a second, somewhat deeper aquifer. It too recharges from precipitation and discharges through seeps to surface water. No use of water from either of these aquifers is known. Water table contour maps of each aquifer indicate that groundwater flows to the west-northwest at the site.

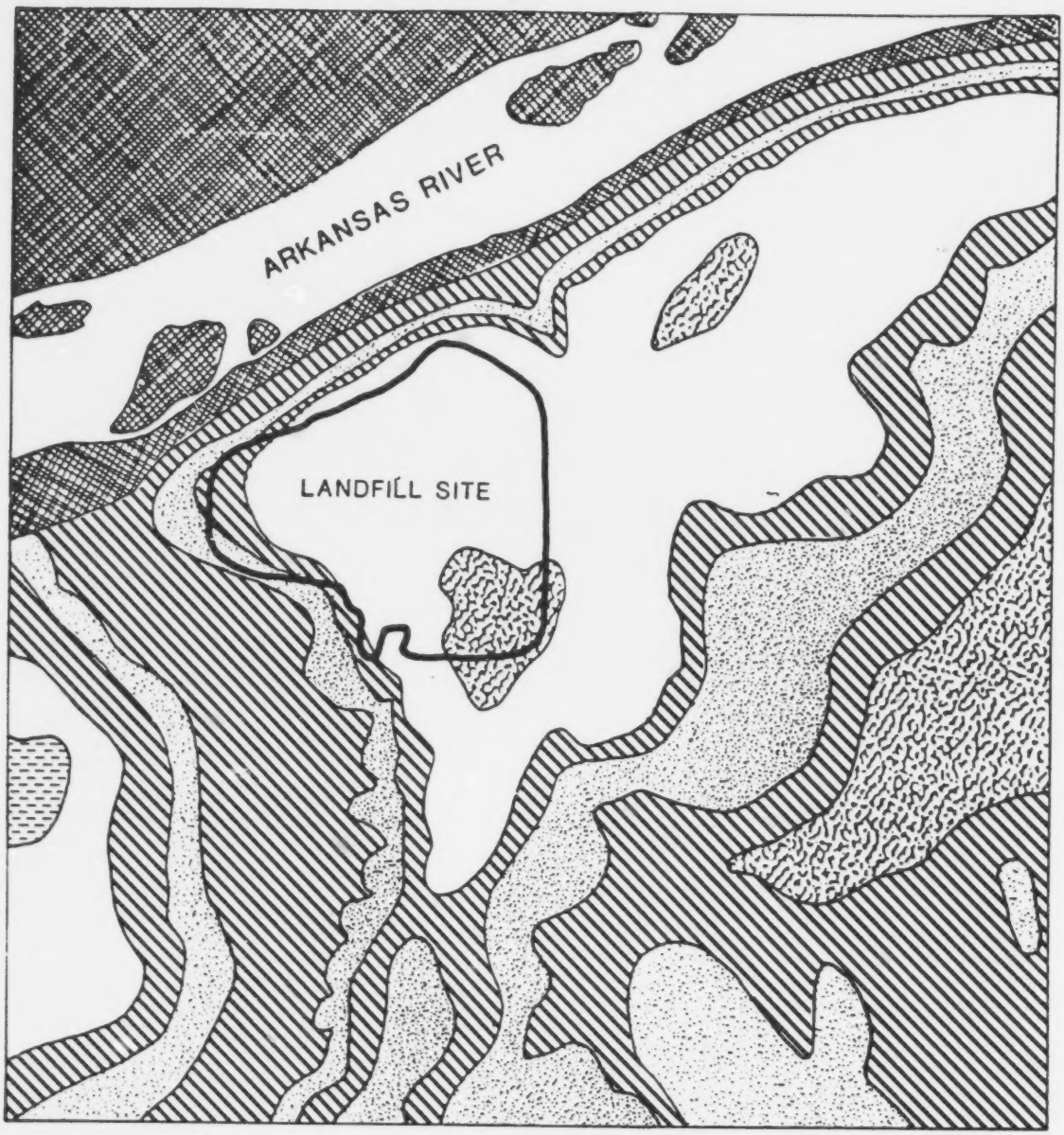
The volume of the waste was determined to be approximately 620,000 cubic yards. The average groundwater flow rate of both aquifers is 720 gallons per day or an estimated 263,000 gallons of water per year.

Remedial Investigation Results

During the RI of the Compass Industries site, samples were collected from soil, water, and air to determine if significant pollutant concentrations are present. Routes of off-site migration include surface runoff, groundwater (by way of recharge to seeps and surface runoff), transported sediments, and air.

Analytical results of the samples collected from the site indicate a large number of organic and inorganic priority pollutants were detected. They include a total of 12 inorganic priority pollutants and at least 33 organic priority pollutants, the most common priority pollutants being base-neutral compounds. The concentrations were greatest in samples of waste collected from the surface and in test trenches.

Groundwater samples were collected from 19 monitoring wells during the RI. These include 18 samples collected from 14 shallow wells completed in the perched water table aquifer, and eight samples collected from five deep wells completed in the Layton Sandstone.



ADAPTED FROM: BENNISON, 1972

0 2000 4000

Scale, Feet

LEGEND

- QUATERNARY DEPOSITS FLOODPLAIN ALLUVIUM
- QUATERNARY DEPOSITS UNDIFF. TERRACE DEPOSITS
- NELLIE BLY FM-GRAY SHALE
- HOGSHOOTER FM-LIMESTONE
- COFFEYVILLE FM-GRAY SHALE
- COFFEYVILLE FM -LAYTON SANDSTONE

N

FIGURE 2

GEOLOGIC MAP

Surface water runoff and sediment samples from drainageways were collected around the perimeter of the landfill to determine if contaminated runoff and sediments were leaving the site. Sampling sites for surface water runoff were selected following several on-site inspections during rainfall events. The general direction of surface runoff is to the north and northwest. Sites for sediment sampling were located using aerial photographs, topographic maps, and on-site field surveys. Seven sediment samples from seven locations were collected, generally in the same areas where runoff samples were collected.

Ten seep samples were collected to determine if contaminants were being leached out of the landfill wastes and transported. Seepage occurs along the perimeter of the landfill near the contact between the Hogshooter Formation and Coffeyville Formation. Sampling sites were located following a period of wet weather by observing potential seep areas identified during the preceding winter. Freezing conditions during the winter permitted the identification of seeps as ice was formed at the point of discharge from the bluffs.

Surficial soil samples were collected randomly around the perimeter and within the interior of the site to determine if surficial soils were contaminated. Eleven soil samples were collected at the 11 locations. One sample was collected near the site entrance as a background sample for comparing constituent concentrations.

In order to determine the extent, characteristics, and distribution of the waste at the site, samples were also collected from the bottom of 17 backhoe trenches.

Air samples were collected by the EPA Technical Assistance Team (TAT) during trench excavation and waste sampling. These samples were collected immediately upwind, downwind, and within the test pit. In addition, air monitoring using an organic vapor analyzer (OVA) was performed at each trench during excavation.

Conclusions

The hydrogeologic and topographic setting of the Compass Industries site appears to minimize the migration of contaminated groundwater both laterally and vertically. The site is located on a bluff a short distance above the Arkansas River. Both the shallow and deep aquifers (the Hogshooter Formation and Layton Sandstone member of the Coffeyville Formation, respectively) outcrop around the entire perimeter of the site. The deep aquifer is separated from the shallow aquifer by 35 to 50 feet of shale units. The relatively low permeability of the shale acts as a partial confining bed that appears to restrict most of the downward migration of contamination to the deep aquifer. Therefore, it appears that most of the contaminated groundwater at the site is contained within the Hogshooter Formation and overlying soils.

An evaluation of all sample results presented in the Remedial Investigation Report for the Compass Industries site has resulted in the following interpretations on the extent and concentration of hazardous wastes at the site.

1. Migration of contaminants in the groundwater is currently being mitigated by attenuating mechanisms since much greater concentrations were measured in solid samples. Possible attenuating mechanisms include compounds with relatively low solubility and miscibility and high soil adsorption capacities.

2. Table 1 provides a list of the three highest concentrations of inorganic and organic priority pollutant compound concentrations for samples of groundwater and waste. This table shows that greater contaminant concentrations are present in the wastes than in groundwater and that the deep groundwater is less contaminated than the shallow groundwater. The highest concentrations of organic compounds for aqueous samples were detected in the sample from USEPA/TAT well number one. This sample is probably of an isolated zone of disposed liquid wastes.

3. Off-site contaminant migration is currently limited to surface runoff and seeps (which are fed by groundwater). Currently this does not present a significant health threat.

4. Samples of groundwater from monitoring wells on the site is highly contaminated. This indicates a degradation of groundwater quality due to waste disposal in both the perched and deep aquifers. The perched aquifer is much more severely contaminated than the deep aquifer.

5. Where wastes were sampled at the ground surface many samples contained siginificant concentrations of both inorganic and organic priority pollutants. The surface waste samples were similar in composition to wastes sampled from trenches.

6. The site's impact on air quality appears to be minimal at this time and it is only during intrusive activities, such as trenching or during fires, that elevated levels of air contaminants may present a health hazard.

7. The volume of the waste was determined to be approximately 620,000 cubic yards. The average groundwater flow rate of both aquifers is 720 gallons per day. Groundwater remediation will require treatment of an estimated 263,000 gallons of water per year.

Potential Impact of Site on Human Health and the Environment

The three major pathways of possible off-site contaminant migration are surface water, groundwater, and air. The possibility also exits for direct contact at the site with contaminated source materials, such as sludge, soil, or sediments.

Surface water runoff and seeps that discharge along the perimeter of the site are the most significant pathways of contaminant migration off-site. Exposure to surface water can be by direct contact or by ingestion. The transfer of contaminants to off-site surface water is another possible exposure pathway.

The majority of the contamination in the groundwater is confined to the upper aquifer. Relatively impermeable shales between the upper and lower aquifers serve to reduce the flow of contaminants to the lower aquifer. Significant concentrations of organic and inorganic contaminants were detected in the shallow aquifer. A detailed analysis of the contaminants detected is contained in the RI report.

The site contains a significant concentration of relatively low hazard gases, and exhibits only trace quantities of toxic volatile organic vapors. A minimal respiratory hazard is posed by the site, although a potential hazard may exist in the event of a subsurface disturbance or fire. Exposure due to air emissions can be by inhalation or indirect contact. The source material poses an exposure risk due to direct contact or by inhalation and ingestion of airborne dust.

II. ENFORCEMENT

Approximately 20 Potentially Responsible Parties (PRPs) have been identified, and may be given special notice to conduct the Remedial Design and Action. To date, there has been no PRP involvement at the site.

III. COMMUNITY RELATIONS HISTORY

Several fires were reported in the landfill during the 1970's. The most recent fire burned for several years before it apparently burned out in 1984. Air monitoring was conducted at the site in response to citizen complaints of strong odors coming from the landfill. The results obtained from the air monitoring showed the presence of organics, but at non-hazardous levels. Investigations conducted by the Environmental Protection Agency (EPA) led to the sites inclusion on the National Priorities List in September 1984.

On July 25, 1984, the U.S. Environmental Protection Agency (EPA) issued a news release announcing that funds had been awarded to the Oklahoma State Department of Health (OSDH). That money was used to conduct studies at the Compass Industries site.

The OSDH held a public meeting at the Berryhill High School on August 20, 1984, to explain the project, answer questions, and take comments.

The completion of the studies was announced to the public via news releases issued by the OSDH on July 16, 1987, and the EPA on July 22, 1987. The scheduling of the August 18, 1987, public meeting to discuss the proposed remedy for the site was also announced.

An EPA prepared fact sheet which described alternative cleanup plans along with the EPA preferred alternative was sent to the interested and affected public on July 22, 1987. The fact sheet gave a brief site history, described the process and alternatives and gave details about the public comment period and public meeting.

Because of the increase in public interest the public meeting on August 18 was changed from the original public library location to the Berryhill School auditorium so that enough seating was assured. The change of location was announced in an EPA news release issued August 7, 1987.

Approximately 65 people attended the August 18, 1987, public meeting.

Community concerns centered around costs of the alternative remedies, efficiency and public health.

Further details concerning Community relations are contained in Appendix C.

IV. ALTERNATIVES EVALUATION

Evaluation Criteria

Section 121(b)(1)(A-G) of the Superfund Amendments and Reauthorization Act contains the nine factors which EPA must consider in selecting a remedy for a Superfund site. These are summarized below:

1. Consistency with Other Environmental Laws

   In determining appropriate remedial actions at Superfund sites, consideration must be given to the requirements of other Federal and State environmental laws, in addition to CERCLA as amended by SARA. Primary consideration is given to attaining applicable or relevant and appropriate Federal and State public health and environmental regulations and standards. Not all Federal and State environmental laws and regulations are applicable to each Superfund response action. The compliance of each remedial alternative with all applicable and relevant environmental laws is shown in Table 2.

2. Reduction of Toxicity, Mobility or Volume

   The degree to which alternatives employ treatment that reduces toxicity, mobility, or volume must also be assessed. Relevant factors are:

- The treatment processes the remedies employ and materials they will treat;
- The amount of hazardous materials that will be destroyed or treated;
- the degree of expected reduction in toxicity, mobility, or volume;
- The degree to which the treatment is irreversible;
- The residuals that will remain following treatment, considering the persistence, toxicity, mobility, and propensity for bioaccumulation of such hazardous substances and their constituents.

3. Short-term Effectiveness

The short-term effectiveness of alternatives must be assessed considering appropriate factors among the following:

- Magnitude of reduction of existing risks;
- Short-term risks that might be posed to the community, workers, or the environment during implementation of an alternative including potential threats to human health and the environment associated with excavation, transportation, and redisposal or containment;
- Time until full protection is achieved.

4. Long-term Effectiveness and Permanence

Alternatives are assessed for the long-term effectiveness and permanence they afford along with the degree of certainty that the remedy will prove successful. Factors considered are:

- Magnitude of residual risks in terms of amounts and concentrations of waste remaining following implementation of a remedial action, considering the persistence, toxicity, mobility, and propensity for bioaccumulation of such hazardous substances and their constituents;
- Type and degree of long-term management required, including monitoring and operation and maintenance;
- Potential for exposure of human and environmental receptors to remaining waste considering the potential threat to human health and the environment associated with excavation, transportation, redisposal, or containment;

- Long-term reliability of the engineering and institutional controls, including uncertainties associated with land disposal of untreated wastes and residuals;

- Potential need for replacement of the remedy.

5. Implementability

The ease or difficulty of implementing the alternatives are assessed by considering the following types of factors:

- Degree of difficulty associated with constructing the technology;

- Expected operational reliability of the technologies;

- Need to coordinate with and obtain necessary approvals and permits (e.g., NPDES, Dredge and Fill Permits for off-site actions) from other offices and agencies;

- Availability of necessary equipment and specialists;

- Available capacity and location of needed treatment, storage, and disposal services.

6. Cost

The types of costs that should be assessed include the following:

- Capital cost;

- Operation and maintenance costs;

- Net present value of capital and O & M costs;

- Potential future remedial action costs.

7. Community Acceptance

This assessment examines:

- Components of the alternatives that the community supports;

- Features of the alternatives about which the community has reservations;

- Elements of the alternatives which the community strongly opposes.

8. State Acceptance

Evaluation factors include assessments of:

- Components of the alternatives the State supports;
- Features of the alternatives about which the State has reservations;
- Elements of the alternatives under consideration that the State strongly opposes.

9. Overall Protection of Human Health and the Environment

Following the analysis of the remedial options against individual evaluation criteria, the alternatives are assessed from the standpoint of whether they provide adequate protection of human health and the environment considering the multiple criteria.

EPA is also directed by SARA to give preference to remedial actions that utilize treatment to remove contaminants from the environment. Offsite transport and disposal without treatment is the least preferred option where practicable treatment technologies are available.

Description of Alternatives

In conformance with the National Contingency Plan, an initial set of remedial approaches were screened to determine whether they might be appropriate for this site. (See the Feasibility Study for details of this evaluation). From these possible remedies, six alternatives were chosen for more detailed evaluation and comparison with the remedy selection criteria outlined above. Each is summarized below:

ALTERNATIVE 1, NO-ACTION - This remedy, consists primarily of restricting public access to the contaminated areas and monitoring the site. The area will be fenced and warning signs will be installed. Site monitoring will involve periodic air and groundwater sampling and analysis. The estimated cost to implement the no action alternative is $672,000.

Four of the remedial action alternatives include a cap which meets RCRA specifications. The RCRA specification cap will isolate the contaminated source material from potential public and wildlife contact and will significantly reduce the infiltration of precipitation through the landfilled area. Surface water diversion technologies will also be implemented to reduce flow over the surface and to reduce the potential for infiltration. The cap will be graded to encourage site run-off and simultaneously prevent erosion of the soil and vegetative cover. The cap design includes gas collection and atmospheric venting, which will be monitored up-gradient and down-gradient of the site in both the

shallow and deep aquifers. Groundwater that emerges from the downgradient hillside to become surface water will also be monitored. Fences and signs will be placed along the perimeter of the site to protect the cap from disturbances.

ALTERNATIVE 2, CAP AND ON-SITE GROUNDWATER TREATMENT - This alternative, is comprised of site grading, cap placement, diversion of surface water, groundwater collection and treatment, and air emissions monitoring. The grading, cap design, gas venting, and surface water diversion technologies were presented in the previous paragraph. Groundwater will be collected prior to its emergence from the down-gradient hillside. The contaminated groundwater will be collected, combined, and treated to State and Federal standards prior to discharge to the Arkansas River. A filtration unit will be specified such that effluent solids levels meet National Pollution Discharge Elimination System (NPDES) requirements. The precipitated metals and other solids from the separation unit will be dewatered. For purposes of cost estimation it is anticipated that the solids will be processed in a mechanical filter unit and disposed as a hazardous solid waste material in a permitted, off-site landfill if the material meets the criteria for land disposal. The estimated cost of the cap and on-site groundwater treatment alternative is $12 million.

ALTERNATIVE 3, CAP AND OFF-SITE GROUNDWATER TREATMENT ALTERNATIVE - This remedy is similar to Alternative 2 except that the groundwater will be collected and transported to an off-site treatment facility. It is anticipated that the groundwater will be placed into a 10,000-gallon holding tank. Groundwater will be routinely transported for off-site treatment and disposal. The estimated cost of the cap and off-site groundwater treatment alternative is $13 million.

ALTERNATIVE 4, FULL ON-SITE THERMAL DESTRUCTION ALTERNATIVE - Involves removing all landfilled material and destroying it in an on-site thermal destruction unit for destruction or removal of 99.99 percent of the organics. Materials handling will include hauling hazardous waste materials, contaminated soils and sediments, and the non-hazardous landfill material to the on-site thermal treatment unit. Upon thermal destruction, the released volatile gases will be collected and burned at a higher temperature and the stack gases will be scrubbed and treated prior to atmospheric release. The residual ash will be tested, solidified if necessary, and disposed of in an appropriate manner dependent upon performance of the toxicity characteristic leaching procedure (TCLP) and other relevant tests. The groundwater will be collected and treated similar to Alternative 2. Performance specifications for treatment would be developed during remedial design from information obtained during RI and would be the basis for the level of thermal destruction. The performance specifications would address pretreatment requirements, materials handling, testing, and disposal options. The estimated cost of the full on-site incineration alternative is $339 million.

ALTERNATIVE 5, PARTIAL ON-SITE THERMAL DESTRUCTION AND CAP - Consists of excavating and thermally destroying the source areas of contaminated material, capping the entire site, installing barriers, and collecting and treating the contaminated groundwater. Residual ash will be solidified if necessary, and disposed of in an on-site landfill which meets RCRA specifications or in an appropriate manner following performance of the TCLP and other relevant tests. The estimated cost of the partial on-site thermal destruction alternative is $17 million.

ALTERNATIVE 6, PARTIAL OFF-SITE THERMAL DESTRUCTION AND CAP - This alternative is similar to Alternative 5 except treatment of contaminated wastes and groundwater will be performed off-site on a service basis. The hazardous material will be removed and transported to the off-site thermal treatment unit, sized, and destroyed. Residual ash will be solidified, if necessary, and disposed of in an off-site landfill which meets RCRA specifications or in an appropriate manner following performance of the TCLP and other relevant tests. The estimated cost of the partial off-site thermal destruction alternative is $45 million.

Evaluation of Alternatives

The degree that the six remedial alternatives meet the nine selection criteria is contained in Table 3. The following values were assigned to compare remedial selection criteria:

++ Alternative would greatly exceed a selection criterion when compared to other alternatives.

\+ Alternative would exceed a criterion in comparison to other alternatives.

0 Alternative can be designed to meet the selection criterion.

\- Special efforts will be necessary in the design of the remedy to meet the selection criterion.

-- In comparison to other remedies, these alternatives would present most difficulty in achieving a selection criterion.

The rationale for the ratings assigned in this table is as follows:

1. COMPLIES WITH ARARs (i.e., meets or exceeds applicable or relevant and appropriate Federal and State requirements)

   Incineration was rated the highest for this criterion (++) because in addition to exceeding all environmental rules, this alternative most effectively meets the preference in SARA for destruction of contaminants. All other alternatives, except for the no action alternative, received a rating of "+" because they all can be designed

to exceed applicable standards. The no action remedy was rated "--" because it does not meet the intent of the RCRA and Superfund requirements for remediation of a hazardous waste site. The National Contingency Plan provisions to respond to a threat of release are also violated by this remedy.

2. REDUCES MOB., TOX., VOL. (i.e., Reduces the Mobility, Toxicity, or Volume of Waste)

   a. No Action was rated "--" because it does nothing to reduce any of these parameters.
   b. Cap and On-site Groundwater Treatment and Cap and Off-site Groundwater Treatment (Alternatives 2 and 3) - Both of these alternatives were judged to effectively reduce the mobility of contaminants. The groundwater treatment serves to reduce the volume and toxicity of wastes on site to some degree and were therefore rated "0".

   c. Full On-site Thermal Destruction was rated "++" for each parameter because this process would destroy the organic compounds in the waste.

   d. Partial On-site Thermal Destruction, Cap, and Groundwater Treatment and Partial Off-site Thermal Destruction, Cap, and Groundwater Treatment (Alternatives 5 and 6) - Because these two remedies would reduce the mobility of wastes only slightly better than Alternatives 2 and 3, they were assessed to be essentially equivalent and were rated "+". The partial destruction of wastes does result in reductions in toxicity (meriting a single +) and a small reduction in volume (a rating of 0) when compared to the simple cap and groundwater treatment remedies.

3. SHORT TERM EFFECTIVENESS

The simple capping remedies (alternatives 2 and 3) were judged capable of being designed to present essentially no risks to workers or residents. The on-site thermal treatment options were assigned a single "-" because these risks can be prevented but would require attention in the design. The added risks of transporting untreated waste long distances resulted in off-site thermal treatment receiving a "--" rating. Doing nothing leaves contaminated seeps and waste exposed to the public, thus no action rated "--".

4. LONG TERM EFFECTIVENESS

All alternatives, except no action, will successfully reduce long term risks to human health and the environment. Because of the added assurance from the destruction of the organic waste, the full incineration was rated "++".

5. IMPLEMENTABILITY

Onsite incineration remedies (alternatives 4 and 5) will require relatively more attention during design than other remedies to ensure implementability and were therefore rated lower ("-") than the other alternatives.

6. COST

Estimated costs for each alternative are summarized in Table 4. Included in this table are total capital and implementation costs, annual operation and maintenance costs, total present worth, and replacement costs. Replacement costs were included to evaluate the cost of remedial action if the alternative were to fail. A replacement cost of $5 million was assessed for the cap and on-site groundwater treatment alternative and the cap and off-site groundwater treatment alternative. This replacement cost is an estimate of replacement of the cap.

The no action alternative had the lowest present worth and operation and maintenance costs. The cap and on-site groundwater treatment and the cap and off-site groundwater treatment alternatives were the next least expensive, with costs of $12 million to $13 million.

Most of the added costs for the remedy involving off-site groundwater treatment are due to added transportation expenses. The partial on-site and partial off-site thermal treatment remedies have a present worth of $17 million and $45 million respectively. The increased cost of the partial off-site thermal destruction, cap, and groundwater treatment alternatives is due to transportation expenses and the higher prices vendors charge at permitted off-site thermal treatment facilities. The full on-site thermal destruction and groundwater treatment alternative has an estimated present worth of $339 million. This alternatives excessive cost over the partial thermal treatment remedies is due to the increased volume of waste to be treated. Only 2 percent of the waste will be treated with the partial thermal treatment remedies.

7. COMMUNITY ACCEPTANCE

At the public meeting on August 18, 1987, the public had several comments and concerns pertaining to all of the remedies. Questions ranged from the damage the remedies will cause to the environment to the time required for cleanup of the site. The no action alternative was left blank because it was not discussed by the public. The remedies involving a cap and groundwater treatment were rated "+" because the public was in favor of this action over thermal treatment of the waste. A rating of "-" was given to the alternatives involving thermal destruction because of the public concern that the thermal treatment unit would create hazardous emissions and increase the potential for exposure.

8. STATE ACCEPTANCE

A rating of "0" was given to the cap and on-site groundwater treatment remedy as proposed in the Feasibility Study. The State (i.e., the Oklahoma State Department of Health) has concurred with the capping portion of this remedy. The final decision for this site defers treatment of groundwater. A rating of "-" was given to all other alternatives because the State did not support any of the other proposed remedies.

9. Overall Protection of Human Health and the Environment

Full on-site thermal destruction received the highest rate of "++", because it results in elimination of the organic contaminants. The thermal treatment unit would be designed to meet RCRA standards. The possibility exists that noxious odors will be given off during the treatment process, but a contingency plan will be developed to address this problem. Destruction of 99.99% of the organic contamination will reduce the potential for human exposure.

The remaining alternatives, except for the no action alternative, were rated "+". This rating is due to the health threat posed by untreated waste remaining on-site. The no action alternative received a rating of "--" for the same reason. This remedy provides no reduction in exposure pathways.

V. PROPOSED REMEDY: RCRA CAP

Rationale

Considering the current and potential site hazards, and also taking into account the unique hydrology of the area, the recommended remedy is a RCRA cap. This alternative consists of site grading, cap placement, diversion of surface water, and air emissions monitoring. The site cap will be required to meet RCRA specifications. Groundwater will be treated at a later date if found to be necessary. This alternative will also require installation of security fences and signs to restrict access to the site.

The site will be monitored for a period of at least 30 years (post-closure time period stipulated under RCRA) to ensure that no significant contaminant concentrations migrate from the site. If however, future migration does occur appropriate remedial actions will be taken.

This alternative is protective and cost-effective, attains applicable or relevant and appropriate Federal and State standards, and utilizes

permanent solutions and treatment technologies to the maximum extent practicable. The reasons for elimination of the other remedies are as follows:

Alternative No. 1; No-action; this alternative is not protective of public health and the environment. It does not meet the intent of RCRA or SARA.

Alternative No. 3; Cap and off-site groundwater treatment; this alternative is the same as alternative 2 except that it entails off-site groundwater treatment. This remedy meets the requirements listed in RCRA, however it is relatively more costly. The potential for human exposure would be increased due to off-site transport of contaminants.

Alternative No. 4; Full on-site thermal destruction; complies with RCRA regulations and also meets many of the preferences listed in SARA. However, this remedy is not cost-effective ($339 million vs. $12 million).

Alternative 2 provides a safe solution to the hazardous waste problem which allows that the waste be left on-site. It also takes advantage of the site's unique hydrology and a RCRA cap to halt migration and further contamination of the groundwater. For this reason, it can be assumed that alternative 2 is protective to human health and the environment.

Alternative No. 5; Partial on-site thermal destruction and cap; this alternative is also not cost effective ($17 million vs $12 million). Under this proposal only one percent or so of wastes would be destroyed yielding negligible environmental benefits. As just stated, the increase in cost does not justify the negligable increase in protection to human health and the environment.

Alternative No. 6; Partial off-site thermal destruction and cap; this alternative meets the requirements of RCRA and SARA. The potential for human exposure would be increased due to off-site transportation. The minor increase in protection to human health and the environment does not justify an increased cost of $45 million.

Consistency with the National Contingency Plan (NCP) and the Provisions of the Superfund Amendments and Reauthorization Act of 1986 (SARA)

The proposed remedy provides adequate protection of public health, welfare, and the environment. This alternative is also consistent with the National Contingency Plan (NCP), in 40 CFR 300.68(h)(2)(iv) and (vi) (Federal Register, 1985) which requires:

(iv) An assessment of each alternative in terms of the extent to which it is expected to effectively mitigate and minimize threats to and provide adequate protection of public health, welfare and the environment.

(vi) An analysis of any adverse environmental impacts, methods for mitigating these impacts, and costs of mitigation.

Additionally, the long-term effectiveness factors cited in SARA Section §121(b)(1) were addressed. These include:

A) The long-term uncertainties associated with land disposal;

B) The goals, objectives, and requirements of the Solid Waste Disposal Act;

C) The persistence, toxicity, mobility, and propensity to bioaccumulate of such hazardous substances and their constituents.

D) Short- and long-term potential for adverse health effects from human exposure;

E) Long-term maintenance cost;

F) The potential for future remedial action costs if the remedial action in question were to fail; and

G) The potential threat to human health and the environment associated with excavation, transportation, and redisposal, or containment.

Operation and Maintenance (O&M)

Site operation and maintenance will include a groundwater and air monitoring and analysis program, inspection of the surface vegetation, and the periodic repair of the perimeter fence. Cap maintenance will entail the inspection of the cap and the maintaining and replacing of the passive gas filters associated with the gas collection and venting system. The State of Oklahoma will have the responsibility for O&M for a period of a least 30 years after completion of the remedial action.

Future Actions

No future remedial actions are anticipated. The selected remedial action is considered permanent. If, however, significant unforeseen off-site contamination occurs as a result of the site, appropriate remedial measures will be taken. As stated under the O&M section, the site will be monitored for a least 30 years to ensure the reliability of the implemented remedial action.

SARA also states that if an alternative results in any hazardous substances, pollutants, or contaminants remaining onsite, the remedy will be reviewed at least every five years to assure that human health and the environment are being protected.

Remedial Action Schedule

Approve Remedial Action (sign ROD)	September 1987
Complete Enforcement Negotiations	January 1988
Obligate Funds to Begin Remedial Design (assuming the PRPs do not take over)	January 1988
Complete Design	March 1989
Obligate Funds to Start Remedial Action	March 1989
Complete Remediation	September 1990

APPENDIX A

Table 1

COMPOUNDS HAVING HIGHEST CONCENTRATIONS IN SAMPLES OF GROUNDWATER

Shallow Well (ug/L)		Deep Well (ug/L)	
Inorganic Compounds		**Inorganic Compounds**	
zinc*	7497	barium	1450
lead*	3397	zinc*	1128
copper*	3162	chromium*	353
Organic Compounds		**Organic Compounds**	
2-methynaphthalene	98000	bis(2-ethylhexyl) phthalate*	30
phenanthrene*	62000	toluene*	6
bis(2-ethylhexyl)* phthalate	46000	di-n-butyl phthalate*	0.8

COMPOUNDS HAVING HIGHEST CONCENTRATIONS IN SAMPLES OF WASTE

Trenches (mg/kg)		Surface Waste (mg/kg)	
Inorganic Compounds		**Inorganic Compounds**	
zinc*	2132	copper*	19930
chromium*	1639	zinc*	5450
lead*	1555	lead*	2790
Organic Compounds		**Organic Compounds**	
2 methylnaphthalene	5300	benzo (b) fluoranthene*	1600
phenanthrene*	250	benzo (a) anthracene*	1100
xylenes	190	pyrene*	710

* Priority pollutants

NOTE: Units equivalent to parts per million.

Does not include methylene chloride, a suspected lab contaminant. Tentatively identified compounds (e.g., hydrocarbons) not included.

TABLE 2

TABLE OF REMEDIAL ALTERNATIVES COMPLIANCE WITH APPLICABLE OR RELEVANT AND APPROPRIATE ENVIRONMENTAL LAWS AND REGULATIONS

LAW OR REGULATION	ANALYSIS	NO ACTION	CAP AND ON-SITE GROUNDWATER TREATMENT	CAP AND OFF-SITE GROUNDWATER TREATMENT	FULL ON-SITE THERMAL DESTRUCTION	PARTIAL ON-SITE THERMAL DESTRUCTION AND CAP	PARTIAL OFF-SITE THERMAL DESTRUCTION AND CAP
Federal							
Resource Conservation and Recovery Act (RCRA)	Violations likely	X					
	Compliance demonstrated or feasible		X	X	X	X	X
DOT Hazardous Materials Transport Rules	Not Applicable	X	X		X	X	
	Compliance demonstrated or feasible			X			X
Clean Air Act (CAA) and National Ambient Air Quality Standards (NAAQS)	Not Applicable	X	X	X			
	Compliance demonstrated or feasible				X	X	X
Toxic Substances Control Act (TSCA)	Not Applicable	X	X	X	X	X	X
National Pollutant Discharge Elimination System (NPDES) Requirements	Not Applicable	X		X	X	X	X
	Compliance demonstrated or feasible		X				

TABLE 2 (continued)

TABLE OF REMEDIAL ALTERNATIVES COMPLIANCE WITH APPLICABLE OR RELEVANT AND APPROPRIATE ENVIRONMENTAL LAWS AND REGULATIONS

LAW OR REGULATION	ANALYSIS	NO ACTION	CAP AND ON-SITE GROUNDWATER TREATMENT	CAP AND OFF-SITE GROUNDWATER TREATMENT	FULL ON-SITE THERMAL DESTRUCTION	PARTIAL ON-SITE THERMAL DESTRUCTION AND CAP	PARTIAL OFF-SITE THERMAL DESTRUCTION AND CAP
Clean Water Act	Violations likely	X					
	Compliance demonstrated or feasible		X	X	X	X	X
Executive Orders (EO) for Flood Plains (11988)	Not Applicable	X	X	X	X	X	X
Fish and Wildlife Coordination Act (FWCA)	Applicable	X	X	X	X	X	X
Endangerment Species Act	Applicable	X	X	X	X	X	X
State							
Oklahoma Solid Waste Regulations	Not Applicable	X	X	X			
	Compliance demonstrated or feasible				X	X	X

TABLE 2 (continued)

TABLE OF REMEDIAL ALTERNATIVES COMPLIANCE WITH APPLICABLE OR RELEVANT AND APPROPRIATE ENVIRONMENTAL LAWS AND REGULATIONS

LAW OR REGULATION	ANALYSIS	NO ACTION	CAP AND ON-SITE GROUNDWATER TREATMENT	CAP AND OFF-SITE GROUNDWATER TREATMENT	FULL ON-SITE THERMAL DESTRUCTION	PARTIAL ON-SITE THERMAL DESTRUCTION AND CAP	PARTIAL OFF-SITE THERMAL DESTRUCTION AND CAP
Oklahoma Hazardous Waste Regulations	Not Applicable	X	X		X	X	
	Compliance demonstrated or feasible			X			X
Oklahoma Clean Air Act (CAA)	Violations likely	X					
	Compliance demonstrated or feasible		X	X	X	X	X
Oklahoma Water Quality Standards	Violations likely	X					
	Compliance demonstrated or feasible		X	X	X	X	X
Local							
Local Permits	Not Applicable	X	X	X	X	X	X

TABLE 3

COMPARISON OR REMEDIAL ALTERNATIVES

COMPASS INDUSTRIES
SUPERFUND SITE

ALTERNATIVES	COMPLIES WITH ARARS	REDUCES MOB.	REDUCES TOX.	REDUCES VOL.	SHORT TERM EFFECT	LONG TERM EFFECT	IMPLEMENT-ABILITY	COST $ MILLION INIT.	COST $ MILLION REPL.	COMMUNITY ACCEPT.	STATE ACCEPT.	OVERALL PROTECT OF HH&E
1. NO ACTION	- -	- -	- -	- -	- -	- -	+ +	1	0	-	-	- -
2. CAP & ON-SITE GW TREATMENT	+	+	0	0	0	+	0	12	5	+	0	+
3. CAP & OFF-SITE GW TREATMENT	+	+	0	0	0	+	0	13	5	+	-	+
4. FULL ON-SITE THERMAL DESTRUCTION GW TREATMENT	+ +	+ +	+ +	+ +	-	+ +	-	339	0	-	-	+ +
5. PARTIAL ON-SITE THERMAL DESTRUCTION, CAP, & GW TREATMENT	+	+	+	0	-	+	-	17	0	-	-	+
6. PARTIAL OFF-SITE THERMAL DESTRUCTION, CAP, & GW TREATMENT	+	+	+	0	- -	+	-	45	0	-	-	+

TABLE 4

COST SUMMARY OF REMEDIAL ALTERNATIVES

	ALT. 1 NO ACTION	ALT. 2 CAP AND ON-SITE GW TREATMENT	ALT. 3 CAP AND OFF-SITE GW TREATMENT	ALT. 4 FULL ON-SITE THERMAL DESTRUCTION, AND GW TREATMENT	ALT. 5 PARTIAL ON-SITE THERMAL DESTRUCTION, CAP AND GW TREATMENT	ALT. 6 PARTIAL OFF-SITE THERMAL DESTRUCTION CAP AND GW TREATMENT
Total Capital & Implementation Cost ($)	374,638	9,255,526	9,288,548	336,806,813	14,676,999	41,446,622
Annual O&M Cost ($)	31,590	272,830	360,280	254,430	272,830	360,280
Total Present Worth ($)	672,435	11,827,271	12,684,877	339,205,303	17,248,944	44,842,951
Replacement Cost ($)	0	5,000,000	5,000,000	0	0	0

APPENDIX B

Compass Industries Landfill Site
Tulsa, Oklahoma
Responsiveness Summary

This Community relations responsiveness summary is divided into two sections:

Section I: Background on Community Involvement and Concerns. This section provides a brief history of community interest and concern raised during the remedial planning activities on the Compass Industries Superfund site.

Section II: Summary of Major Comments Received during the Public Comment Period and the EPA Responses to the Comments. Both written and spoken comments are categorized by topics. EPA responses to these relevant major topics are also presented.

I. Background on Community Involvement

The Compass Industries Landfill site is located in a sparsely populated area of west Tulsa, Oklahoma. The community of Berryhill and the city of Sand Springs are within two miles of the site. An elementary school lies within one-half mile and a major regional park is immediately adjacent to the site.

Local residents and officials have long expressed concern regarding open burning and other poor practices at the site. The smoke led citizens and local officials to request studies to determine potential hazards at the site. The State began extensive air and water sampling in 1983. EPA also performed sampling and no immediate health hazards were identified.

The Berryhill Citizens for a Cleaner Environment, organized by residents reacting primarily to smoke from the site, pressed for remedial action.

In May 1983 the site was evaluated as a possible candidate for inclusion on the National Priorities List under the Superfund law. The Compass site was included on the list in August 1983.

The preliminary investigation work began at the site in October 1983. The underground fires stopped burning in October 1984.

On the afternoon of August 18, 1987, EPA staff members met with Tulsa City Officials to brief them on the findings of the remedial investigation and feasibility studies, to describe the various remedial alternatives considered, and to describe EPA's preferred remedy.

Present were Major Dick Crawford; John Selph, Tulsa County Commissioner; Kieth Francis representing Congressman Jim Inhofe; Sharon Keasler representing Senator Don Nickles; Mike Wright and Jerry Cleveland of the Tulsa City-County Health Department; R. Fenton Rood and Dennis Hrebec of the Oklahoma State Department of Health; Patrick Boulder, Houston Adams, Louis Van Landingham, Priscilla Harris and Herb Van Fleet of the City of Tulsa; Jennifer Kreel and Susan Young of INCOG; and William Cox and Kenneth Hill of the City of Sand Springs.

Issues raised include costs of the various alternatives, efficiency of the EPA preferred alternative and various technical questions.

At 7:00 pm on the evening of August 18, 1987, the public meeting began in the Berryhill School Auditorium. Representatives of EPA and OSDH made presentations, listened, and responded to public comments. Some 65 people attended.

II. Summary of Major Comments Received during the Public Comment Period and the EPA Responses to the Comments

1. Comment: Will any drainage or erosion problems along Avery Drive be caused by the remedial action at the Compass Industries site?

   Response: No, Drainage and erosion issues will be addressed and provided for in the design phase.

2. Comment: Can 32 acres be covered effectively by a synthetic liner?

   Response: It is technically feasibility to cover 32 acres with a liner. Sites as large as 100 acres have been covered effectively with a synthetic liner. The engineering and implementation of installing the liner will be addressed in the design phase.

3. Comment: Will the seeps going into the Arkansas River be treated?

   Response: No, the seeps themselves will not be treated. The groundwater on-site which generates the seeps may be treated in the future if necessary.

4. Comment: What quality standards will the treated water be required to meet?

   Response: All State and Federal standards.

5. Comment: What volume of water will be treated?

   Response: Treatment of groundwater is deferred pending an evaluation of the effectiveness of the cap. The feasibility study estimates approximated a 263,000 gallon yield per year from the aquifers which discharge off-site. These estimates, calculated over the 30-year operation and maintenance period amount to a total of approximately 7,890,000 gallons.

Considering the majority of contaminants are within the upper zone of the aquifer system, actual volume and timeframe for treatment should be considerably less.

6. Comment: If the landfill is capped, won't the water dry up eventually?

   Response: In theory, the water in the perched or contained water bearing zone within the landfill area should dry up. Treatment of the contaminated liquids, if found necessary, in the landfill area will additionally reduce the potential for offsite migration of contaminants.

7. Comment: Will the groundwater have to be airstripped? Will the resulting sludge be landfilled on-site?

   Response: Air stripping is a potential treatment alternative, however, a specific technology is not specified in the Feasibility Study. If air stripping was selected sludges could be landfilled on-site.

8. Comment: What protection will there be against air pollution?

   Response: Construction of the cap remedy is not anticipated to generate any uncontrollable adverse air emissions and will reduce the potential for future emissions.

9. Comment: How can the land be used if the cap and groundwater treatment remedy is implemented?

   Response: Future land use considerations will be evaluated in the upcoming design phase based on the needs of protection of the cap.

10. Comment: How far along is EPA with identifying PRPs?

    Response: Approximately 20 PRPs have been identified.

11. Comment: What is EPA's timetable for implementing a remedy at the site?

    Response: Design, procurement of contractors and construction is estimated to take approximately 3 years.

12. Comment: Why is there such a large difference in the the State recommended $1.6 million cap remedy and the EPA $13 million cap remedy.

    Response: No basis for a $1.6 million cap remedy has been submitted by the State. The construction cost estimates submitted as the official public comments by the Oklahoma State Department of Health

(OSDH) for a the cap without liner is represented as costing $3,412,944. The States proposed cap design is similar to the EPA RCRA cap design, less the synthetic liner. The estimated construction costs of the EPA RCRA cap, with liner, is $4,256,000. The balance of the $12 million cost estimate consists of groundwater collection and treatment, contingency, implementation, and operation and maintenance costs. Therefore the difference in costs is only $843,056. A more detailed cost comparison is provided on page 11.

13. Comment: A liner would produce toxic fumes if the underground fires started again.

    Response: By reducing oxygen within the landfill interior the synthetic liner will reduce the potential for reoccurring underground fires. The possibility of the liner catching fire is remote since it is contained within a 5' layer of compacted earthen material.

14. Comment: More engineering should be conducted prior to the selection of remedies.

    Response: EPA disagrees with this viewpoint. Congress, through SARA, has structured the Superfund program to prevent the unnecessary expenditure of funds. Detailed engineering information, necessary for the design stage, is not needed to select a remedial concept.

15. Comment: The Compass Industries site should be considered an improperly closed solid waste disposal facility and should be closed as required in the Oklahoma Solid Waste Management Act.

    Response: EPA disagrees. The Compass Industries site was permitted to accept solid and hazardous wastes and was a major landfill in the Tulsa area. Documents indicate in excess of 40,000 barrels of refinery sludges and waste liquids were disposed of at the Compass Industries site. In addition, analytical data gathered during the Remedial Investigation verifies the presence of hazardous waste on-site as well as migrating off-site. Due to the presence of hazardous waste and the current and potential migration of contaminants off-site the closure of the site in accordance with Subtitle C of the Resource Conservation and Recovery Act, which requires a cap with liner, is relevant and appropriate.

16. Comment: The low levels of compounds migrating off-site from the seeps establishes a carcinogenic risk factor of 10^{-5} (1 in 100,000).

    Response: The EPA goal is to reduce carcinogenic risk to 10^{-6} (1 in 1,000,000) for groundwater.

17. Comment: The levels of compounds in the seeps do not cause a significant increase of contaminants in the surface water of the Arkansas River.

    Response: Levels of contaminants in the Arkansas river have no bearing on the authority of EPA to respond to the release or threat of release of contaminants from the Compass Industries site. The potential exists for direct contact with and ingestion of the seeps themselves.

18. Comment: A cap without a liner can meet all applicable or relevant and appropriate requirements.

    Response: EPA agrees. However, if technically feasible a cap with a liner has additional technical advantages and provides greater protection of public health and the environment. A liner would be less permeable and would further reduce the infiltration of surface water. The long term advantage to the liner is that less water would be generated from the seeps.

19. Comment: Acute and chronic bioassays or multi series bioassays should have been conducted as well as tests to determine bioaccumilation and bioconcentration of toxics at the Compass Industries site.

    Response: EPA disagrees. EPA typically relies on historical toxicological information for evaluating contaminant levels at Superfund sites. The response authority under CERCLA as amended by SARA extends beyond current effects from a site to include potential releases (and effects) of contamination therefore biological studies although informative, are not required for selecting a remedy.

20. Comment: No Endangerment Assessment on the Compass Industries site has been available for review and no Health Assessment has been accomplished for the Compass Industries site. Therefore no balancing of any such risks against the costs of the remedies is possible.

    Response: EPA disagrees. The information developed in the Endangerment Assessment was in fact incorporated and utilized in the Feasibility Study and available for public comment, although not under separate cover. Documents on which the Record of Decision is based are included in the Administrative Record which is available for public review prior to the signing of the Record of Decision. A Health Assessment is not required prior to the signing of a Record of Decision. Adequate data has been gathered with regards to potential health impacts on which to make a selection of a remedy. The Agency for Toxic Substances and Disease Registry (ATSDR) concurs with the EPA determination of the need to respond to the current and potential release of contaminants from the site. ATSDR is currently evaluating the information on the Compass Industries site and will provide a Health Assessment which can be utilized during the upcoming design phase.

21. Comment: What long term impacts (20 to 30 years) does the site pose?

    Response: The potential for future fires and continued off-site migration of contaminants pose adverse human health and environmental impacts. Other impacts which the site may pose cannot be effectively predicted. A RCRA cap and groundwater treatment would mitigate these problems as well as most of the unseen, long term problems.

22. Comment: Is there an approved Federal and/or State hazardous waste dump in the State of Oklahoma?

    Response: No, at this time there are no approved Federal and/or State hazardous waste disposal sites in Oklahoma. The Lone Mountain site near Waynoka, Oklahoma is not in compliance with its permitting requirements. This is not to say that when remedial action begins at a site there will not be a Federal and/or State approved disposal facility in the State of Oklahoma.

23. Comment: Is Superfund a congressional appropriation? Does it have a 12 month limitation on it or is it continuous with an option?

    Response: Superfund under SARA is a congressional appropriation which contains $8.5 billion for a 5 year period. This 5 year period began in 1986.

24. Comment: How much of the $62 million in Superfund monies that has been spent by EPA Region VI went for actual clean ups as opposed to studies?

    Response: Since the program began, over $250 million has been obligated within the Region VI jurisdiction for Superfund evaluations and cleanups when the commitments by responsible parties are added to the dollars used from the fund. Of this sum, $200 million is for the design and construction of remedies however this figure cannot be compared to the remaining $50 million. The Region has found that, in many instances, responsible parties do not commit to performing site cleanups until EPA's evaluations are completed and a decision regarding site clean up approach is made. In addition, about half of the Regions Superfund sites are still under study. For these two reasons a simple ratio of the amount of monies spent on cleanups versus studies is misleading and inaccurate.

25. Comment: An adequate health risk assessment of the existing health risks at the site and determination of the health risks of the remedial alternatives has not been conducted.

    Response: A qualitative assessment of the potential public health threats in the absence of remedial action was conducted. This was accomplished in the Compass Industries Landfill Endangerment Assessment dated July 10, 1987, and amended August 10, 1987, under the Cooperative Agreement with OSDH.

Response: EPA disagrees. Adequate data has been gathered and the evaluations have been conducted to satisfy the above mentioned guidance documents and statutory requirements on which to base a decision.

27. Comment: "The Feasibility Study is fundamentally flawed because it fails to consider lower cost remedial operations that provide protection similar to more expensive options being considered, contrary to SARA and F.S. guidance requirements."

    Response: EPA disagrees with this comment. Numerous alternatives with a wide range of costs were evaluated in the Feasibilty Study. Most of these alternatives were eliminated because they could not meet the intent of SARA and the NCP and were not cost effective. EPA has selected the most cost-effective and technically applicable alternative.

28. Comment: "The Feasibility Study is fundamentally flawed because it fails to properly evalute the risk to public health."

    Response: EPA disagrees. An endangerment assessment was conducted and incorporated into the ROD. EPA feels that this endangerment assessment properly evaluates the risk to public health and adequately supports the proposed remedial action.

29. Comment: "The Feasibility Study fails to properly analyze and apply applicable or relevant and appropriate requirements (ARARs)."

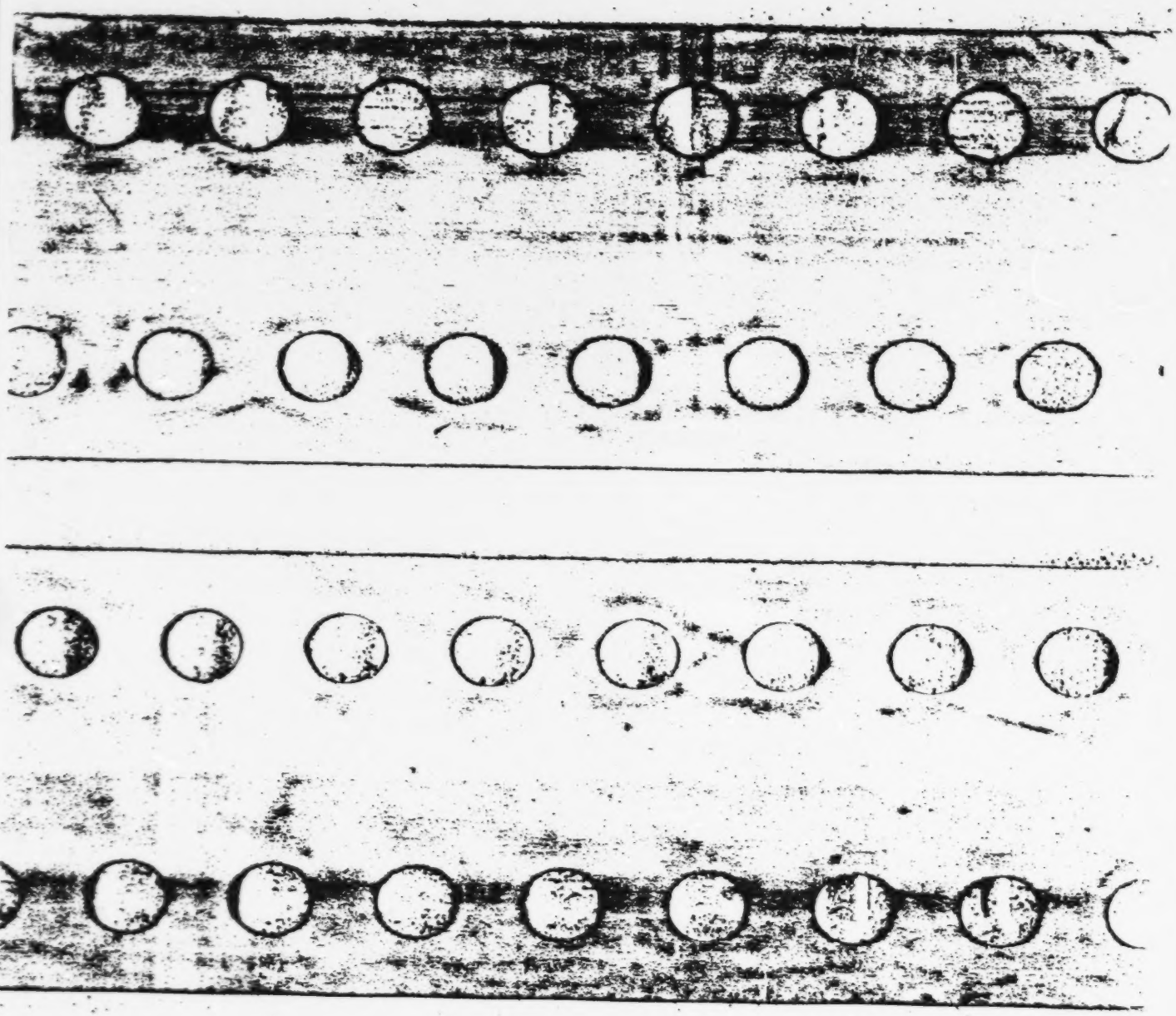
    Response: EPA disagrees. The applicable or relevant and appropriate requirements (ARARs) are listed in Table 7-3 of the Feasibility Study. These ARARs were analyzed and used to evaluate the various alternatives studied.

30. Comment: "Sun was deprived of a reasonable opportunity to participate in the establishment of an administrative record."

    Response: EPA believes that Sun was given sufficient time to evaluate the RI/FS and to participate in the establishment of an administrative record. In addition, Sun has been aware of the site activities since at least August 1984. At this time a letter was sent to Sun requesting information on the site. This letter requested information on waste generation, transport, and disposal. Public notice of the upcoming comment period was issued July 22, 1987. Four weeks were allowed for the public comment period. The comment period began on August 5, 1987, and was orginally scheduled to close on August 26. An extention to the public comment period changed the closing date to September 2.

31. Comment: "Failure of the Remedial Investigation to conform to EPA's guidance on Remedial Investigation under CERCLA procedures for data validity and sufficiency."

    Response: EPA disagrees. The Remedial Investigation guidance was adequately followed and a comprehensive study was conducted.



32. Comment: "Quality assurance and quality control measures at the laboratory are not documented."

    Response: EPA disagrees. Quality assurance and quality control procedures were adequately followed and are documented in a QA/QC plan approved by EPA in April 1984. Actual QA/QC results are included in the Administrative Record.

33. Comment: "Data used in the RI/FS is questionable."

    Response: EPA disagrees. Adequate quality data was compiled in which to conduct a thorough Feasibility Study and to base a remedial action decision. The quality of this data was assured through the use of a QA/QC plan.

34. Comment: "EPA's basis (air route) for listing this site on the NPL is not borne out by the RI/FS."

    Response: Although air sampling showed minimal respiratory hazard, analysis of on-site waste justifies need for a response/ remedial action. Analytical results of the on-site waste is documented in the RI/FS.

35. Comment: "The Remedial Investigation did not conform to the technical workplan submitted by Mathes on April 25, 1986." (Drilling logs not submitted, etc.)

    Response: EPA disagrees. Documentation for the drilling which took place during the remedial investigation is contained in Appendices A-E of the Remedial Investigation Report.

36. Comment: "Groundwater data from the lower aquifer is questionable and may have been introduced by well drilling activity." (This is assumed to refer to old abandoned petroleum wells existing onsite).

    Response: The Remedial Investigation Report indicates that oil well drilling in the vicinity of the site may have influenced contamination of the lower aquifer. This was considered in the evaluation of appropriate remedial actions.

37. Comment: "The quantity of samples is insufficient for a meaningful site evaluation."

    Response: This is incorrect. An adequate number of samples were collected to properly evaluate the risks posed by the site and to support the proposed action.

38. Comment: "The Feasibility Study does not address technical feasibility or remedial options as required by SARA and EPA F.S. Guidance.

Response: This is incorrect. The technical feasibility of the remedial options is covered in section 7.2 of the Feasibility Study. Other references to the technical feasibility of the alternatives can be found under the title of implementability.

39. Comment: "Cost estimates for remedial alternatives used in the F.S. are imprecise, do not reflect likely actual costs of the options and therefore do not allow for meaningful comparison of costs as required by SARA and EPA's F.S. guidance."

Response: This is incorrect to the extent that the F.S. has adequately evaluated the cost of the alternatives to enable the selection of the most cost effective alternative. The intent of the FS cost estimates is to evaluate relative costs and not to give the level of cost expected in a detailed design report. As indicated in the feasibility study, the costs for the alternatives are based on cost estimates of -30% to +50%.

40. Comment: "The quality of the background data as reported in the remedial investigation is admittedly questionable."

Response: EPA disgrees. Due to the random disposal techniques used at the site and varying hydrogeologic conditions, various contaminant levels were detected at several different locations. Some background samples do contain higher levels of some specific compounds compared to other sampling locations. This merely indicates contamination levels and compounds vary throughout the site.

41. Comment: "The quality of the data reported in the Remedial Investigation on PCB contamination is admittedly questionable."

Response: EPA disagrees. The presence of PCBs is documented in two separate sampling events and is viewed as being reliable data.

42. Comment: "The lack of chain of custody documentation is contrary to EPA's requirements."

Response: An established chain of custody procedure was followed. This information is in the Administrative Record.

43. Comment: "The RI and FS fail to analyze and rank compounds present on-site for potential adverse health effects, as required by EPA RI and FS guidance."

Response: EPA disagrees. Selected indicator compounds, chosen on their potential for indicating adverse health effects, are indicated in the summary of the endangerment assessment in the feasibility study.

44. Comment: "Neither the RI nor the FS addresses information gaps that are necessary to identify and remediate any potential aquifer cross contamination prior to selection and implementation of the remedy."

Response: This information is not considered necessary for implementing the proposed remedy. Since the only use of the groundwater by the surrounding residents is upgradient from the site, the need to remediate potential aquifer cross contamination was not evaluated. (No down-gradient groundwater users exists because the aquifers in question discharge to the surface just north of the site.

45. Comment: "The RI/FS reports fail to follow the format prescribed in EPA guidance."

Response: EPA disagrees. The RI/FS and endangerment assessment follow the format prescribed in EPA guidance.

COMPASS INDUSTRIES
OSDH vs EPA REMEDY COST

COST COMPONENT	OSDH "D" CAP COST ESTIMATE	EPA "C" CAP COST ESTIMATE	COST DIFFERENCE
Site Development	0	150,000	
Fencing	0	47,700	
Groundwater Monitoring	0	153,000	
Air Monitoring	0	6,500	
Cap	3,412,944	4,256,000	843,056
Gas Collection & Venting	0	36,000	
Groundwater Collection System	0	621,600	
Mobilization, Bonds, Insurance	0	263,540	
Health & Safety	0	368,956	
Contingency (Bid)	0	790,620	
Contingency (Scope)	0	1,054,160	
Engineering	341,294	500,000(A)	158,706
Legal	0	387,404	
Construction Management	273,035	619,846	346,811
Total Capitol & Implementation	4,027,273	9,255,526	
Annual O&M (Includes Groundwater Treatment)	0	272,830	
Total Present Worth	4,027,273	11,827,271	7,799,988

(A) Includes Groundwater Collection & Treatment Design

APPENDIX C

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Agency for Toxic Substances
and Disease Registry
Atlanta GA 30333

MEMORANDUM

DATE September 15, 1987

FROM: Senior Regional Representative
Regional Office for Health Response
ATSDR/ROHR-VI

TO: Paul Sieminiski
Remedial Project Manager
ALONM Section (6H-SA)

The Agency for Toxic Substances and Disease Registry (ATSDR) has been requested by the Environmental Protection Agency (EPA) to review and evaluate the Remedial Investigation/Feasibility Study/Endangerment Assessment data that was generated from the Compass Industries Superfund Site located in Tulsa, OK.

Currently the ATSDR is reviewing these documents to provide EPA with a comprehensive Health Assessment for this site.

Based on our review to date, the ATSDR, Regional Office for Health Response in consultation with staff at ATSDR-Headquarters is of the opinion that the Compass Industry Superfund Site does pose a current and potential public health threat.

Initial indications are that ATSDR recommendations will be directed toward unacceptable risks associated with direct public contact and/or unintentional fires at this site.

Carl R. Hickam, R.S.

APPENDIX D

ADMINISTRATIVE RECORDS INDEX

Job Name: Compass Industries

Job Number: 0983

Document Date	10/03/75
Document Type	Type Appeal from Decision of City Commission of Tulsa, Okla.
Originator	Troye Kennon
Originator - Affiliation	Affiliation Atty. - Compass Industries, Inc.
Recipient	Dist. Ct., Tulsa County, Okla.
Recipient - Affiliation	
Description	Appeal of Tulsa City Commission ruling
Number of Pages	5
Document Number Sequence	

Document Date	03/08/76
Document Type	Memorandum
Originator	Dennis Bergstrom
Originator - Affiliation	Tulsa City/County Health Dept.
Recipient	Health Dept. Files
Recipient - Affiliation	
Description	March 5, 1976 inspection of land fill
Number of Pages	1
Document Number Sequence	

Document Date	Undated, covers inspections from 1/12/76 to 01/19/76
Document Type	
Originator	Dennis Bergstrom
Originator - Affiliation	Tulsa City/County Health Dept.
Recipient	Health Dept. Files
Recipient - Affiliation	
Description	Fires at Chandler Land Fill Jan. 12 through Jan. 19, 1976
Number of Pages	3
Document Number Sequence	

Document Date	04/12/76
Document Type	Memorandum
Originator	Dennis Bergstrom
Originator - Affiliation	Tulsa City/County Health Dept.
Recipient	Health Dept. Files
Recipient - Affiliation	
Description	Summary of Inspections 1/12/76 to 4/12/76
Number of Pages	2
Document Number Sequence	

ADMINISTRATIVE RECORDS INDEX

Job Name: Compass Industries

Job Number: 0983

Document Date	09/27/16
Document Type	Informational Letter
Originator	Gary Cox
Originator - Affiliation	Public Health Atty. for Tulsa City/Co. Health Dept.
Recipient	Doyle and Holmes Law Offices
Recipient - Affiliation	Receiver for Compass Industries
Description	Informs receipient that Health Dept. seeks their compliance with state law Re: land fill closure
Number of Pages	1
Document Number Sequence	

Document Date	06/15/82
Document Type	Summary reports and worksheets
Originator	Unknown
Originator - Affiliation	
Recipient	Unknown
Recipient - Affiliation	
Description	Computes Hazard Ranking System score
Number of Pages	10
Document Number Sequence	

Document Date	09/20/82
Document Type	Inspection Report, U.S. E.P.A. Form T2070-3 (10/79)
Originator	David Anderson
Originator - Affiliation	U.S. E.P.A.
Recipient	U.S. E.P.A. Files
Recipient - Affiliation	
Description	Potential Hazardous Waste Site Inspection Report
Number of Pages	14
Document Number Sequence	

Document Date	11/05/82
Document Type	Memorandum
Originator	Jinks Martin, Jr.
Originator - Affiliation	Citizen
Recipient	Jerry Cleveland
Recipient - Affiliation	Tulsa City/County Health Dept.
Description	Complaint about fumes and smoke
Number of Pages	1
Document Number Sequence	

ADMINISTRATIVE RECORDS INDEX

Job Name: Compass Industries

Job Number: 0983

Document Date	12/20/82
Document Type	General Complaint Form
Originator	Martin Bousum
Originator - Affiliation	Citizen
Recipient	Health Dept. Files
Recipient - Affiliation	Tulsa City/Co. Health Dept.
Description	Describes problems of Mr. Martin Bousum
Number of Pages	1
Document Number Sequence	

Document Date	12/21/82
Document Type	Complaint Report
Originator	Darrell Roeder
Originator - Affiliation	Citizen
Recipient	Health Dept. Files
Recipient - Affiliation	Tulsa City/Co. Health Dept.
Description	Complaints of a Mr. Darrell Roeder
Number of Pages	1
Document Number Sequence	

Document Date	01/03/83
Document Type	Complaint Report
Originator	Martin Bousum
Originator - Affiliation	Citizen
Recipient	Health Dept. Files
Recipient - Affiliation	Tulsa City/Co. Health Dept.
Description	Details, complaints of a Mr. Martin Bousum
Number of Pages	1
Document Number Sequence	

Document Date	01/03/83
Document Type	Complaint Report
Originator	Thorunn M. Gilstrap
Originator - Affiliation	Citizen
Recipient	Health Dept. Files
Recipient - Affiliation	Tulsa City/Co. Health Dept.
Description	Complaints of Mr. Thorunn M. Gilstrap
Number of Pages	1
Document Number Sequence	

ADMINISTRATIVE RECORDS INDEX

Job Name: Compass Industries

Job Number: 0983

Document Date	01/14/83
Document Type	Letter
Originator	Mark S. Coleman
Originator - Affiliation	State Dept. of Health
Recipient	Dr. Edgar Cleaver
Recipient - Affiliation	Tulsa City/County Health Dept. (TCCHD)
Description	TCCHD as plaintiff in any action brought by Tulsa Co. Dist. Atty.
Number of Pages	1
Document Number Sequence	

Document Date	01/17/83
Document Type	Resolution
Originator	Terry Young
Originator - Affiliation	Tulsa County Board of County Commissioners
Recipient	
Recipient - Affiliation	
Description	Requests Dist. Atty. to initiate action abating the public nuisance at Tulsa Refuse Dump No. 1
Number of Pages	1
Document Number Sequence	

Document Date	01/28/83
Document Type	Petition filed in Tulsa County Dist. Ct.
Originator	Tulsa County Board of County Commissioners, Tulsa City/County Health Dept., State of Okla.
Originator - Affiliation	
Recipient	Filed in Tulsa County Dist. Ct.
Recipient - Affiliation	
Description	Requests the court hold hearings on alleged violations
Number of Pages	8
Document Number Sequence	

Document Date	03/28/83
Document Type	Memorandum
Originator	Gary S. McDonald
Originator - Affiliation	Solid Waste Division, Okla. State Dept. of Health
Recipient	Health Dept. Files
Recipient - Affiliation	
Description	Describes sampling conducted 3/23/83
Number of Pages	2
Document Number Sequence	

ADMINISTRATIVE RECORDS INDEX

Job Name: Compass Industries

Job Number: 0983

Document Date	03/28/83
Document Type	Memorandum
Originator	Joseph Dunagan
Originator - Affiliation	Industrial Waste Division, Okla. State Dept. of Health (OSDH)
Recipient	Richard Thompson
Recipient - Affiliation	Solid Waste Division (OSDH)
Description	Reconnaissance of land fill prior to 3/28/83
Number of Pages	2
Document Number Sequence	

Document Date	03/28/83
Document Type	Air quality evaluation of land fill fire
Originator	Air Quality Staft, Tulsa City/County Health Dept.
Originator - Affiliation	TCCHD
Recipient	Health Dept. Files
Recipient - Affiliation	
Description	Summarizes monitoring activities from 10/26/82 to 1/28/83
Number of Pages	28
Document Number Sequence	

Document Date	04/26/83
Document Type	Press Release
Originator	Eddie Lee
Originator - Affiliation	U.S. E.P.A.
Recipient	
Recipient - Affiliation	
Description	Press release stating U.S. E.P.A. will conduct further air quality tests
Number of Pages	1
Document Number Sequence	

Document Date	06/09/83
Document Type	Record
Originator	Cynthia Bachunas
Originator - Affiliation	Unknown
Recipient	Russell Bartley (U.S. E.P.A.) and Ken Raymond (Okla. State Dept. Health)
Recipient - Affiliation	
Description	Hazard Ranking System
Number of Pages	29
Document Number Sequence	

ADMINISTRATIVE RECORDS INDEX

Job Name: Compass Industries

Job Number: 0983

Document Date	06/10/83
Document Type	Section 3007 Request for Information
Originator	Dick Whittington
Originator - Affiliation	U.S. E.P.A.
Recipient	Bill Jackson
Recipient - Affiliation	Owner of Compass Industries landfill
Description	Possible receipt of hazardous waste
Number of Pages	3
Document Number Sequence	

Document Date	09/02/83
Document Type	3007 Request for Information
Originator	Allyn M. Davis
Originator - Affiliation	U.S. E.P.A.
Recipient	John Deatherage
Recipient - Affiliation	Standard Industries
Description	Wastes received at Compass and on Standard Industries' purchase of site
Number of Pages	3
Document Number Sequence	

Document Date	01/10/84
Document Type	Letter
Originator	Russell Bartley
Originator - Affiliation	U.S. E.P.A.
Recipient	Fenton Rood
Recipient - Affiliation	Okla. State Dept. of Health
Description	Compass Industries Workplan
Number of Pages	3
Document Number Sequence	

Document Date	03/01/84
Document Type	Quality Assurance Project Plan
Originator	Okla. State Dept. of Health
Originator - Affiliation	
Recipient	Health Dept. Files
Recipient - Affiliation	
Description	Quality Assurance Project Plan
Number of Pages	114
Document Number Sequence	

ADMINISTRATIVE RECORDS INDEX

Job Name: Compass Industries

Job Number: 0983

Document Date	04/18/84
Document Type	Memorandum
Originator	Paul Sieminski, Project Officer
Originator - Affiliation	U.S. E.P.A. Region (6AW-SP)
Recipient	Ray Lozano, Coordinator
Recipient - Affiliation	Office of Quality Assurance
Description	QAPP-Compass Cooperative Agreement
Number of Pages	3
Document Number Sequence	

Document Date	05/07/84
Document Type	Letter
Originator	Paul Sieminski
Originator - Affiliation	U.S. E.P.A.
Recipient	Fenton Rood
Recipient - Affiliation	Okla. State Dept. of Health
Description	Approval of 3/1/84 version of Quality Assurance Project Plan
Number of Pages	1
Document Number Sequence	

Document Date	06/15/84
Document Type	Health and Safety Plan
Originator	David Wharton
Originator - Affiliation	Okla. State Dept. of Health
Recipient	Health Dept. Files
Recipient - Affiliation	
Description	Health and Safety Plan for Remedial Investigation
Number of Pages	7
Document Number Sequence	

Document Date	08/20/84
Document Type	Minutes of Public Meeting
Originator	Okla. State Dept. of Health
Originator - Affiliation	
Recipient	Health Dept. Files
Recipient - Affiliation	
Description	Minutes of public meeting held 8/20/84
Number of Pages	3
Document Number Sequence	

1

ADMINISTRATIVE RECORDS INDEX

Job Name: Compass Industries

Job Number: 0983

Document Date	11/28/84
Document Type	Letter
Originator	John R. Totin
Originator - Affiliation	Ecolgy and Environment, Inc.
Recipient	Ken Burns
Recipient - Affiliation	Okla. State Dept. of Health
Description	Describes monitoring well installation and sampling
Number of Pages	14
Document Number Sequence	

Document Date	01/11/85
Document Type	Letter of response
Originator	Dick Whittington, Regional Administrator Region VI
Originator - Affiliation	U.S. E.P.A.
Recipient	I.J. Ramsbottom, Environmental Clearance Officer
Recipient - Affiliation	Dept. Housing & Urban Development
Description	HUD's Draft Environmental Impact Statement
Number of Pages	4
Document Number Sequence	

Document Date	01/23/85
Document Type	Letter
Originator	Mike Wright/Solid & Industrial Waste
Originator - Affiliation	Tulsa City/County Health Dept.
Recipient	Ken Burns - Superfund Projects
Recipient - Affiliation	Okla. State Dept. of Health
Description	Steps to contact access to landfill
Number of Pages	2
Document Number Sequence	

Document Date	02/00/85
Document Type	Preliminary Report
Originator	Okla. State Dept. of Health
Originator - Affiliation	State agency
Recipient	For Okla. State Dept. of Health files
Recipient - Affiliation	State agency
Description	Preliminary Report - Compass Industries
Number of Pages	9
Document Number Sequence	

ADMINISTRATIVE RECORDS INDEX

Job Name: Compass Industries

Job Number: 0983

Document Date	03/85
Document Type	Magazine article, editor's pg., table of contents
Originator	Maria Welding, Patsy Varnell
Originator - Affiliation	Berryhill Citizens for Safe Environment
Recipient	Oklahoma Sierran
Recipient - Affiliation	Sierra Club/Okla. Chp.
Description	Historical overview of Compass Landfill
Number of Pages	3-4/4
Document Number Sequence	

Document Date	04/03/85
Document Type	Newspaper article
Originator	Julie DelCour
Originator - Affiliation	Tulsa World Newspaper - Staft
Recipient	Public
Recipient - Affiliation	
Description	Dismissal of $150 million Lawsuit
Number of Pages	1
Document Number Sequence	

Document Date	04/22/85
Document Type	Letter
Originator	Ken Burns - Superfund Project Coordinator
Originator - Affiliation	Okla. State Dept. of Health
Recipient	Thomas J. DiRito
Recipient - Affiliation	Bellamah Community Development
Description	Shenandoah Project - Sand Springs, Okla.
Number of Pages	2
Document Number Sequence	

Document Date	06/12/85
Document Type	Sampling Plan
Originator	Okla. State Dept. of Health
Originator - Affiliation	State agency
Recipient	For Dept. of Health files (Okla.)
Recipient - Affiliation	State Agency
Description	Groundwater monitoring sampling plan
Number of Pages	13
Document Number Sequence	

ADMINISTRATIVE RECORDS INDEX

Job Name: Compass Industries

Job Number: 0983

Document Date	10/00/85
Document Type	Planning - Study Reports
Originator	Okla. State Dept. of Health Waste Mgmt. Service
Originator - Affiliation	
Recipient	For Dept. of Health files (Okla.)
Recipient - Affiliation	State agency (Okla.)
Description	Health and Safety Plan - RI
Number of Pages	33
Document Number Sequence	

Document Date	Undated, apparently March 1986
Document Type	Trenching Sampling Plan
Originator	Okla. State Dept. of Health
Originator - Affiliation	
Recipient	Health Dept. Files
Recipient - Affiliation	
Description	Plan for trenching and sampling
Number of Pages	9
Document Number Sequence	

Document Date	04/28/86
Document Type	Technical Work Plan
Originator	Jn. Mathes & Assoc., Inc.
Originator - Affiliation	Engineering firm
Recipient	Okla. State Dept. of Health
Recipient - Affiliation	
Description	Plan Re: exploration services for RI
Number of Pages	27
Document Number Sequence	

Document Date	05/01/86
Document Type	News release
Originator	Okla. State Dept. of Health
Originator - Affiliation	State agency
Recipient	Public
Recipient - Affiliation	
Description	Historical background Re: Compass landfill
Number of Pages	
Document Number Sequence	2

ADMINISTRATIVE RECORDS INDEX

Job Name: Compass Industries

Job Number: 0983

Document Date	05/13/86 - 05/31/86
Document Type	Record
Originator	Jn. Mathes & Assoc., Inc.
Originator - Affiliation	Engineering firm
Recipient	Okla. State Dept. of Health
Recipient - Affiliation	
Description	Daily driller's record
Number of Pages	13
Document Number Sequence	

Document Date	05/16/86
Document Type	Letter of Review
Originator	Douglas Kent
Originator - Affiliation	MDK Consultants
Recipient	Thomas DiRito
Recipient - Affiliation	Bellamah Community Development
Description	Review of proposed monitoring plan
Number of Pages	14
Document Number Sequence	

Document Date	05/28/86
Document Type	Letter
Originator	Thomas J. DiRito - Tulsa Mgr.
Originator - Affiliation	Bellamah Community Development
Recipient	Hal Cantwell - Environmental Specialist
Recipient - Affiliation	Okla. State Dept. of Health
Description	Review of proposed monitoring plan
Number of Pages	1
Document Number Sequence	

Document Date	Undated
Document Type	Report
Originator	Unknown - probably U.S. E.P.A. (6)
Originator - Affiliation	U.S. E.P.A. Region VI
Recipient	U.S. E.P.A. Region VI - Compass File
Recipient - Affiliation	
Description	General overview of site
Number of Pages	13
Document Number Sequence	

ADMINISTRATIVE RECORDS INDEX

Job Name: Compass Industries

Job Number: 0983

Document Date	14/01/87
Document Type	Letter
Originator	Allyn M. Davis, Director
Originator - Affiliation	Hazardous Waste Mgtment Service/U.S. E.P.A.
Recipient	Mark Coleman, Deputy Commissioner
Recipient - Affiliation	Okla. State Dept. of Health
Description	Correspondence Re: RI/FS
Number of Pages	1
Document Number Sequence	

Document Date	04/03/87
Document Type	Letter; sampling plan
Originator	Hal Cantwell, ES
Originator - Affiliation	Superfund Program/Solid Waste Division, Okla. State Dept. of Health
Recipient	Paul Sieminski (6H-SS)
Recipient - Affiliation	U.S. E.P.A.
Description	Industries Dioxin Testing
Number of Pages	6
Document Number Sequence	

Document Date	04/15/87
Document Type	Memorandum
Originator	R. Fenton Rood, Director
Originator - Affiliation	Solid Waste Division
Recipient	Mark Coleman, Deputy Commissioner
Recipient - Affiliation	Environmental Health Services
Description	March Progress Report
Number of Pages	3
Document Number Sequence	

Document Date	05/13/87
Document Type	Cover letter, Action Specific Requirements
Originator	Hal Cantwell/Environmental Specialist
Originator - Affiliation	U.S. E.P.A.
Recipient	Carl Edlund, Chief
Recipient - Affiliation	U.S. E.P.A.
Description	Action-specific State of Okla. ARARs
Number of Pages	5
Document Number Sequence	

ADMINISTRATIVE RECORDS INDEX

Job Name: Compass Industries

Job Number: 0983

Document Date	05/21/87
Document Type	Cover letter, Analytical Results
Originator	Dale Markley, Sr., Hydrogeologist
Originator - Affiliation	Jn. Mathes & Assoc., Inc.
Recipient	Hal Cantwell
Recipient - Affiliation	Okla. State Dept. of Health
Description	Analytical Results - Dioxin & Furans/RI/FS
Number of Pages	19
Document Number Sequence	

Document Date	07/10/87
Document Type	Assessment
Originator	Dr. Raymond Harlison - Dept. Medical Science
Originator - Affiliation	Univ. of Ark.
Recipient	Jn. Mathes & Assoc., Inc.
Recipient - Affiliation	
Description	Endangerment Assessment
Number of Pages	111
Document Number Sequence	

Document Date	07/13/87
Document Type	Report by engineering firm for Compass
Originator	John Mathes & Assoc., Inc.
Originator - Affiliation	Engineering firm
Recipient	Okla. State Dept. of Health
Recipient - Affiliation	State agency
Description	RI Report for Compass Industries/Vol. I
Number of Pages	156 - 2 pgs. "References"
Document Number Sequence	

Document Date	07/13/87
Document Type	Appendix -R/I Report/Compass Industries (A-E)
Originator	Jn. Mathes & Assoc., Inc.
Originator - Affiliation	Engineering firm
Recipient	Okla. State Dept. of Health
Recipient - Affiliation	State agency
Description	Appendix for Engineering logs Vol II
Number of Pages	99
Document Number Sequence	

ADMINISTRATIVE RECORDS INDEX

Job Name: Compass Industries

Job Number: 0983

Document Date	07/13/87
Document Type	Appendix R/I Report/Compass Industries (F)
Originator	Jn. Mathes & Assoc., Inc.
Originator - Affiliation	Engineering firm
Recipient	Okla. State Dept. of Health
Recipient - Affiliation	State Agency
Description	Appendix for Analytical Data Vol III
Number of Pages	223
Document Number Sequence	

Document Date	07/13/87
Document Type	Appendix - R/I Report (F continued)
Originator	Jn. Mathes & Assoc., Inc.
Originator - Affiliation	Engineering firm
Recipient	Okla. State Dept. of Health
Recipient - Affiliation	State Agency
Description	Appendix for Analytical Data Vol. IV
Number of Pages	228
Document Number Sequence	

Document Date	07/13/87
Document Type	Report
Originator	John Mathes & Assoc., Inc.
Originator - Affiliation	
Recipient	Ok. State Dept. Health
Recipient - Affiliation	
Description	Feasibility Study Report
Number of Pages	121
Document Number Sequence	

Document Date	08/10/87
Document Type	Assessment
Originator	John Mathes & Assoc., Inc.
Originator - Affiliation	
Recipient	Ok. State Dept. Health
Recipient - Affiliation	
Description	Endangerment Assessment
Number of Pages	116
Document Number Sequence	

ADMINISTRATIVE RECORDS INDEX

Job Name: Compass Industries

Job Number: 0983

Document Date	08/10/87
Document Type	Addendum
Originator	Jn. Mathes & Assoc., Inc.
Originator - Affiliation	
Recipient	OK State Dept. Health
Recipient - Affiliation	
Description	Addendum - Endangerment Assess. Exhibits A-F
Number of Pages	140
Document Number Sequence	

Document Date	08/18/87
Document Type	Letter
Originator	Jerry Cleveland, Asst. Director
Originator - Affiliation	Tulsa City/Co. Health Dept.
Recipient	Carl Edlund, Chief
Recipient - Affiliation	U.S. E.P.A. (6) SuperFund Programs
Description	Response to Health Dept.'s recommend.
Number of Pages	1
Document Number Sequence	

Document Date	08/18/87
Document Type	Memorandum
Originator	Betty Jean Reece, Project Officer
Originator - Affiliation	U.S. E.P.A. (6) 6H-SS
Recipient	U.S. E.P.A. (6) Compass File
Recipient - Affiliation	
Description	Meeting 08/18/87
Number of Pages	2
Document Number Sequence	

Document Date	08/20/87
Document Type	Letter
Originator	Wm. R. Cox - Dir. Utility Plants/Opera.
Originator - Affiliation	City of Sand Springs
Recipient	Carl Edlund, Chief
Recipient - Affiliation	U.S. E.P.A. (6) SuperFund Programs
Description	Comments Re: Compass Site
Number of Pages	3
Document Number Sequence	

ADMINISTRATIVE RECORDS INDEX

Job Name: Compass Industries

Job Number: 0983

Document Date	08/21/87
Document Type	Letter
Originator	David Page - Atty.
Originator - Affiliation	Boone, Smith, Davis & Hurst - Law Office
Recipient	Carl Edlund, Chief
Recipient - Affiliation	U.S. E.P.A. (6) SuperFund Programs
Description	Extension of public comment period
Number of Pages	1
Document Number Sequence	

Document Date	08/25/87
Document Type	Letter
Originator	Hal D. Cantwell, Environ. Special.
Originator - Affiliation	OK State Dept. Health
Recipient	Carl Edlund, Chief (6H-S)
Recipient - Affiliation	SuperFund Program - U.S. E.P.A. (6)
Description	Extension - Public Comment Period
Number of Pages	1
Document Number Sequence	

Document Date	08/27/87
Document Type	Letter
Originator	R. Fenton Rood, Dir.
Originator - Affiliation	OK State Dept. Health
Recipient	Carl Edlund, Chief
Recipient - Affiliation	U.S. E.P.A. (6) SuperFund Programs
Description	Public comments Re: selection of remedy
Number of Pages	5
Document Number Sequence	

Document Date	08/27/87
Document Type	Letter
Originator	Evelyn Reid
Originator - Affiliation	Citizen - Tulsa, OK
Recipient	Carl Edlund, Chief
Recipient - Affiliation	U.S. E.P.A. (6) SuperFund Program
Description	Response to public meeting
Number of Pages	2
Document Number Sequence	

ADMINISTRATIVE RECORDS INDEX

Job Name: Compass Industries

Job Number: 0983

Document Date	08/28/87
Document Type	Letter
Originator	Shawn Thorton
Originator - Affiliation	Citizen - Bartlesville, OK
Recipient	Carl Edlund, Chief
Recipient - Affiliation	U.S. E.P.A. (6) SuperFund Program
Description	Response to public meeting
Number of Pages	1
Document Number Sequence	

Document Date	08/31/87
Document Type	Letter
Originator	John Selph
Originator - Affiliation	Board of Co. Commissioners
Recipient	Carl Edlund, Chief
Recipient - Affiliation	U.S. E.P.A. (6) SuperFund Programs
Description	State Health Dept.'s proposed remedy
Number of Pages	2
Document Number Sequence	

Document Date	08/31/87
Document Type	Letter
Originator	Mark Coleman, Deputy Commissioner
Originator - Affiliation	OK Dept. of Health
Recipient	Robt. Layton, Reg. Admin.
Recipient - Affiliation	U.S. E.P.A. Region VI
Description	RA alternatives
Number of Pages	1
Document Number Sequence	

Document Date	09/01/87
Document Type	Letter/attach.
Originator	R. Fenton Rood, Director
Originator - Affiliation	OK State Dept. Health
Recipient	Carl Edlund, Chief (6H-S)
Recipient - Affiliation	U.S. E.P.A. Region VI
Description	Public comments/summary table
Number of Pages	2
Document Number Sequence	

ADMINISTRATIVE RECORDS INDEX

Job Name: Compass Industries

Job Number: 0983

Document Date	09/01/87
Document Type	Letter
Originator	Charles W. Shipley - Atty.
Originator - Affiliation	Law Firm - Shipley & Schneider
Recipient	Carl Edlund, Chief
Recipient - Affiliation	U.S. E.P.A. (6) SuperFund Programs
Description	Response to ROD
Number of Pages	3
Document Number Sequence	

Document Date	09/02/87
Document Type	Letter/attachment
Originator	Edward A. Kurent - Atty.
Originator - Affiliation	Pepper, Hamilton & Scheetz - Law firm
Recipient	Carl Edlund, Chief
Recipient - Affiliation	U.S. E.P.A. (Region VI - 6H-S)
Description	Comments on RI/FS Reports
Number of Pages	41
Document Number Sequence	

Document Date	09/10/87
Document Type	Letter
Originator	Jerry Lasker, Exec. Director
Originator - Affiliation	Indian Nations Council of Govts.
Recipient	Robt. Layton - Regional Admin.
Recipient - Affiliation	U.S. E.P.A. Region VI
Description	Comments Re: ROD
Number of Pages	3
Document Number Sequence	

Document Date	09/28/87
Document Type	Letter/attachment
Originator	Edward A. Kurent - Atty.
Originator - Affiliation	Law firm - Petter, Hamilton & Scheetz
Recipient	Carl Edlund/Julie Bozich
Recipient - Affiliation	U.S. E.P.A. Region VI
Description	Comments Re: RI/FS; unindexed AR docu.
Number of Pages	73
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ADMINISTRATIVE RECORDS INDEX

Job Name: Compass Industries

Job Number: 0983

Document Date	09/29/87
Document Type	Letter
Originator	Mark S. Coleman, Depty. Commiss.
Originator - Affiliation	OK State Dept. of Health
Recipient	Allyn Davis, Director
Recipient - Affiliation	U.S. E.P.A. Region VI
Description	Acceptance of ROD
Number of Pages	1
Document Number Sequence	

APPENDIX E

Joan K. Leavitt, M.D.
Commissioner

Board of Health
James A. Cox Jr. M.D.
President
Linda M. Johnson, M.D.
Vice President
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OKLAHOMA STATE
DEPARTMENT OF HEALTH

P.O. BOX 53551
1000 N.E. TENTH
OKLAHOMA CITY, OK 73152

AN EQUAL OPPORTUNITY EMPLOYER

September 29, 1987

Allyn M. Davis, Director
Hazardous Waste Management Division
Environmental Protection Agency
Region VI
Dallas, Texas 75202-2733

Dear Dr. Davis:

The Oklahoma State Department of Health (OSDH) has reviewed the Declaration for the Record of Decision for the Compass Industries site, Tulsa, Oklahoma. The OSDH does concur with the selected remedy detailed in the Declaration. The OSDH looks foward to continuing to work together with the EPA towards a solution to the problems at the Compass Industries site.

Sincerely,

Mark S Coleman

Mark S. Coleman, Deputy Commissioner
for Environmental Health Services